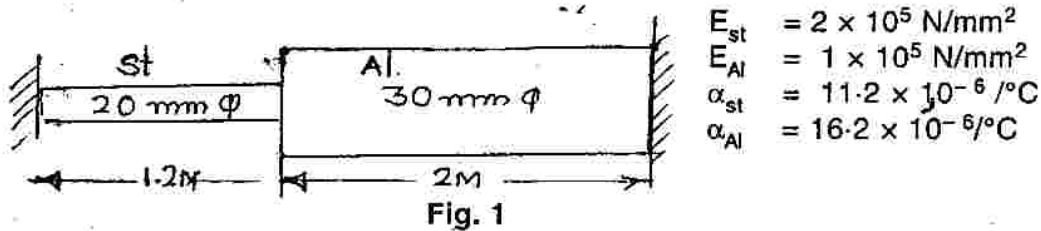
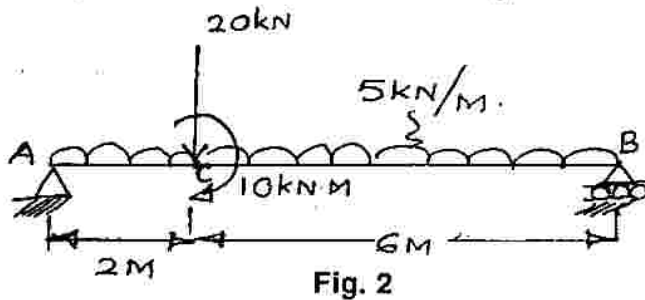


- B.: (1) Question No. 1 is compulsory.
 (2) Attempt any four questions out of remaining six questions.
 (3) Figures to the right indicate marks.
 (4) Assume missing data suitably.

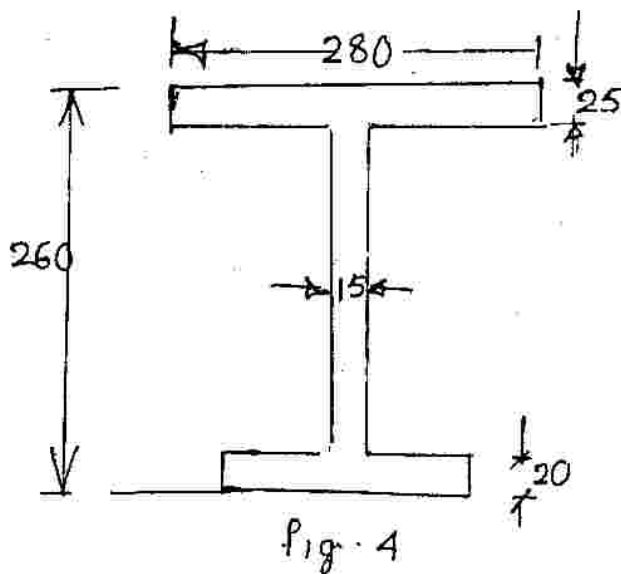
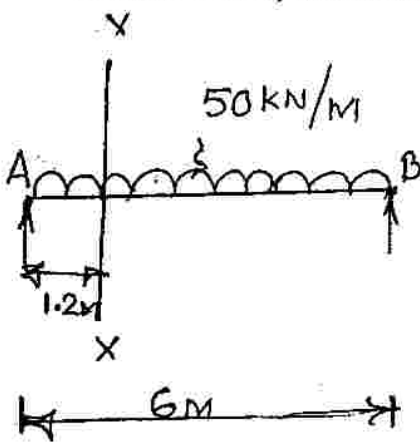
1. Explain briefly : 20
- | | |
|--|---|
| (a) Proof stress | (f) Brazing and soldering |
| (b) Bulk modulus | (g) Thermoset and thermoplastic materials |
| (c) Hooke's law | (h) Additives used in plastics |
| (d) Stress strain curve for ductile material | (i) Injection moulding |
| (e) Point of Contraflexure | (j) Properties of Ceramic Materials. |
2. (a) Find the stresses in Steel and Aluminium, if the composite material is heated to 180°C. 10
 when (a) Supports unyielded (b) Supports Come closer by 1 mm.



- (b) Sketch SFD, BMD for a beam shown in figure 2. 10



3. (a) At a section 1.2 M to the Right of left support find Shear force and Bending moment Values, and sketch Bending stress and shear stress variation diagrams. 14



(b) Find the Core of a T section shown in figure 5.

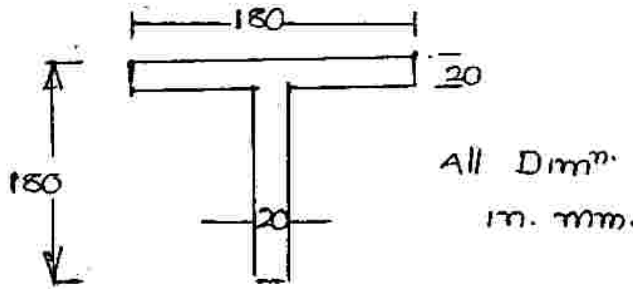
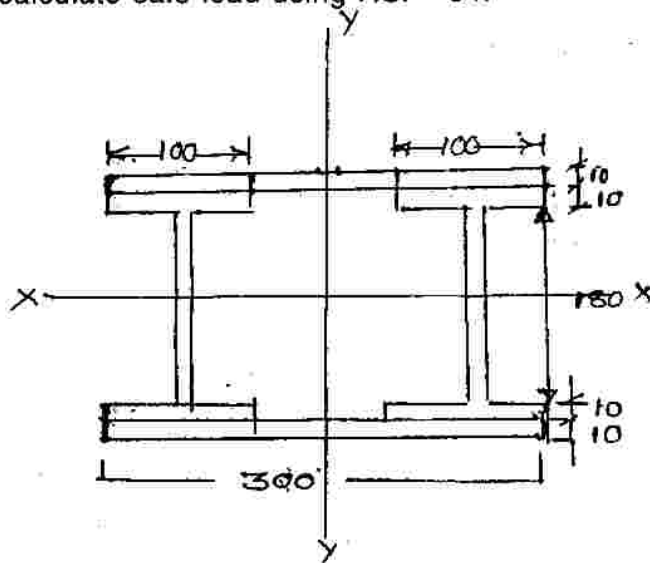


fig 5

4. (a) For a cross-section of a Column Determine Rankine's crippling load and also calculate safe load using F.S. = 04.



All Dimension in mm

Take $f_c = 150 \text{ N/mm}^2$

Rankine's $a = \frac{1}{1600}$
constant

Factor of safety 4.

fig. 6

(b) A thin cylindrical shell 2 m long having inside diameter 1200 mm, thickness 12 mm is subjected to an internal fluid pr. of 2 N/m.

Determine :

(a) Change in diameter (b) Change in length (c) Change in Volume.
Take $E = 2 \times 10^5 \text{ MPa}$, $\mu = 0.31$

5. (a) With the help of a neat sketch. Explain the process of "oxy-acetylene" gas welding. 12

(b) Derive flexural equation $\frac{M}{I} = \frac{f}{y} = \frac{E}{R}$ with usual notation. 8

6. (a) Discuss the following parameters on the quality of moulded products. 10
(i) Mould temperature
(ii) Filling rate.

(b) Explain briefly glass manufacturing and properties of glass. 10

7. (a) Write in brief : 10
(i) Factors affecting choice of Enamel.
(ii) Properties of lining.

(b) Suggest the appropriate remedial measures to overcome the following moulding defects : 10
(a) Shrinkage

(1) Q
(2) A
(3) F
(4) A

Defin

(a)

(b) F
li

(a)